



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,604	03/29/2004	Pieratilio Di Gregorio	6023-175US (BX2592M)	2819
570	7590	12/19/2005	EXAMINER	
AKIN GUMP STRAUSS HAUER & FELD L.L.P. ONE COMMERCE SQUARE 2005 MARKET STREET, SUITE 2200 PHILADELPHIA, PA 19103			BUTLER, PATRICK	
			ART UNIT	PAPER NUMBER
			1732	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/811,604

Applicant(s)

GREGORIO, PIERATTILIO DI

Examiner

Patrick Butler

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

The Applicant's Amendments and Accompanying Remarks, filed 28 September 2005, have been entered and have been carefully considered. No claims are new, Claim 8 is amended, no additional claim is canceled, and Claims 18, 12, and 13 are pending.

Despite these advances, the invention as currently claimed is not found to be patentable for reasons herein below. The previously applied rejections remain applied with clarification modifications of the rejection text below and modification due to the amendment of Claim 8.

The Text of those sections of Title 35, US Code not included in this action can be found in a prior Office Action.

### ***Claim Rejections - 35 USC § 103***

Claims 1-4, 7, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al (5,107,649) in view of Hunter (5,792,539), Späth (6,189,354) and the applicant's own admission (specification, page 1, paragraph 0005).

With regard to claim 1, Benson et al disclose a known procedure for producing a planar thermo-insulating vacuum panel, (column 4, line 40-52) having an envelope (figure 15, number 82) comprising at least one multilayer sheet (column 8, lines 50-54) and containing at least one filler selected from the group consisting of inorganic powders and porous organic foams (column 16, lines 25-29). Benson et al further

Art Unit: 1732

disclose that the panel can be curved into a cylinder, (column 9, lines 22-26 and Figure 18).

Benson et al disclose using at least one filler selected from the group consisting of inorganic powders and porous organic foams (column 16, lines 25-29), but do not expressly disclose that the powders and foams are included inside the vacuum envelope. Hunter teaches a bendable vacuum panel (column 8, lines 57-67), which contains at least one filler selected from the group consisting of inorganic powders and porous organic foams (column 9, lines 21-29). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a powder or foam as taught by Hunter in the panel taught by Benson et al. The motivation to do so would have been to increase the R-value significantly (Hunter, column 9, lines 46-49).

Benson et al do not disclose the method by which the panel is curved, but do disclose that the panel may comprise metal sheets, (see column 4, line 8-17) and that the sheets may be bent (column 6, lines 48-54). Attention is drawn to Späth, which discloses a method for curving hollow metal sheets (column 1, lines 6-8) through calendaring by using two rollers and a third element (a roller) of equal length placed parallel to the two rollers, (see Figure 1). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to curve the panels taught by Benson et al using the method taught by Späth. The motivation to do so would have been to produce a curved hollow metal sheet so that the hollow section is protected against bulges, nicks or against any other kind of deformation (Späth, column 1, lines 15-18).

Benson et al do not expressly disclose that the vacuum panel comprises at least one metal sheet having a thickness not greater than 100  $\mu\text{m}$ . Applicant's admission discloses that envelopes made of barrier sheets of thickness generally not greater than 100  $\mu\text{m}$  are known in the art (specification, page 1, paragraph 005). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to assemble and curve a vacuum panel as taught by Benson et al in view of Späth et al having a barrier sheet of less than 100  $\mu\text{m}$  thickness. The motivation to do so would have been to create a high-performance insulation material occupying less volume that is therefore more valuable (Benson et al, column 12, lines 12-14).

With regard to claim 2, Späth teaches the calendaring operation is carried out by passing the planar vacuum panel between at least two rollers and a third element of length equal at least to a length of the two rollers and having a position parallel to the two rollers (Figure 1, number 27).

With regard to claim 3, Späth teaches the third element is a third roller (Figure 1, number 27).

With regard to claim 4, Benson et al teach the thickness of the vacuum panel may be 2.5 mm thick (column 11, lines 49-55), which is less than the claimed 20 mm. Hunter teaches that the filling material may be rigid polyurethane foam (column 9, line 24),

With regard to claim 7, Späth also discloses a method for curving metal panels through calendaring by using two rollers and a third element of equal length placed

parallel to the two rollers where the position of the third element (a roller) is continuously modified during the calendaring operation, (column 8, lines 62-67).

With regard to claim 12, Benson et al teach that the vacuum panel contains at least one getter material (column 4, lines 51-52).

With regard to claim 13, the applicant's specification teaches that it is known to produce a vacuum panel using a multilayer barrier sheet having at least one metal layer (specification, paragraph 0005). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to form the vacuum panel taught by Benson et al using a barrier sheet which is a multilayer sheet having at least one metal layer. The motivation to do so would have been to confer a barrier effect and mechanical support and protection of the barrier layer (specification, paragraph 0005).

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al (5,107,649) in view of Hunter (5,792,539), Späth (6,189,354), the applicant's own admission (specification, page 1, paragraph 0005) and Nishimoto (6,336,693).

With regard to claim 5, the teachings of Benson et al in view of Hunter, Späth, and the applicant's own admission teach the invention of claim 4 as discussed above but do not expressly teach the vacuum panel is between 5 and 20 mm. Nishimoto discloses that it is known to construct vacuum panels using hard polyurethane foam having a thickness in a range of 10 to 20 mm (see column 3, lines 47-58). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to increase the thickness of the panel taught by Benson et al in view of Hunter, Späth, and

the applicant's own admission to between 5 and 20 mm as taught by Nishimoto. The motivation to do so would have been to increase the insulating properties of the panel.

With regard to claim 6, Benson et al in view of Hunter, Späth, and the applicant's own admission teach the invention of claim 1 as discussed above and that the filler may be silica powder (column 9, lines 26-28) but do not expressly teach the vacuum panel is between 5 and 20 mm. Nishimoto discloses that it is known to construct vacuum panels having a thickness in a range of 10 to 20 mm (see column 3, lines 47-58). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to increase the thickness of the panel taught by Benson et al in view of Hunter, Späth, and the applicant's own admission to between 5 and 20 mm as taught by Nishimoto. The motivation to do so would have been to increase the insulating properties of the panel.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al (5,107,649) in view of Hunter (5,792,539), Späth (6,189,354), the applicant's own admission (specification, page 1, paragraph 0005), and Haase (4,011,357).

With regard to claim 8, Benson et al in view of Hunter, Späth, and the applicant's own admission teach the invention of claim 1 as discussed above. Furthermore, Benson et al also teach that spacer beads coated with a polystyrene or similar adhesive material are to be affixed to the wall sheets of the planar vacuum panel, (column 7, lines 9-14), thus necessarily creating at least a layer of polymeric adhesive on at least one face of the panel. Benson teaches that the panel is subsequently bent, (column 7, lines 2-8). Benson et al does not expressly teach that the polystyrene layer is in a foam state. Haase discloses that polystyrene can be foamed (column 2, lines 47-56).

Therefore, it can be reasoned that foamed polystyrene would be a similar adhesive material to polystyrene as disclosed by Benson. Furthermore, Benson recognizes that polystyrene has desirable insulating properties (column 7, lines 34-40) and the use of foamed polystyrene as adhesive would enhance the insulating properties of the vacuum panel as a whole. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have placed adhesive polymeric foam on at least one face of a vacuum panel and to have curved the panel through calendaring for the reasons discussed above.

### ***Response to Arguments***

Applicant's arguments filed 28 September 2005 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC 103 rejections. Applicant's arguments appear to be on the grounds that:

- 1) The Examiner's rejection relies on an excessive number of references.
- 2) The Examiner uses hindsight.
- 3) Benson does not teach a multilayer sheet for the envelope.
- 4) Contrary to the Examiner's contention, ref. 82 of Fig. 15 is not an envelope, but rather a conventional insulation filler material, which fills the space between panels, both laterally and vertically. The examiner relies on the reference number as pointing to the composite panel to show the envelope—using the reference number to indicate something located at this macro reference point—not to the particular micro reference point of filler material between the panels.



5) The two inventions of Hunter are distorted to combine an unbendable embodiment's insulation with a bendable embodiment's bending.

6) Applicants cites a "preferred form" (preferred embodiment) of Hunter as justification that R would not increase, and therefore, would not encourage one of ordinary skill to combine since R is not increased.

7) Späth does not protect against bulges, nicks, or against any other kind of deformation by way of calendaring by using two rollers and a third element in a manner which is presently claimed. Moreover, the third element, a rod inside the hollow section, would not be possible if combined due to the filled core of the combined references.

8) Applicants argue that the Examiner mistakenly referred to Yamashita when intending to refer to Späth.

9) Neither Benson nor Späth teach using metal wall sheets less than 100 micrometers. Since Benson teaches not to form around the spherical spacers, the sheets of less than 100 micrometers would not be adequate because it would not avoid forming around the spherical spacers.

10) The motivation of Applicant's admission being used is not valid because Benson does not refer to the thickness of the barrier sheet at col. 12, lines 12-14, and Benson would not have appreciated the negligible effect of 100 micrometers versus 200-300 micrometers. This contradicts the fact that Benson, as cited by the Examiner, goes on to teach replacing materials of lower R values with materials of higher R values.

11) Späth is unrelated to planar vacuum panels, and is related to bending rigid hollow sections made entirely of metal.

12) Increasing the thickness of the panels goes against the teachings of Benson sited to increase value with reduced thickness.

13) Benson's stressing that it is important that the spherical beads maintain a near "point" contact with the metal walls so that it is not desirable that the polystyrene melt so much that it forms a layer on the walls is far different from the adhesive layer specified in claim 8 which is for the purpose of adhering the planar panel to an object to be insulated.

The Applicant's arguments are addressed as follows:

1) In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

2) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

3) In viewing Figure 10, it is visible that viewed as a composite panel, the envelope is multi-layered, with the several panels providing for the several layers.

4) The composite panel in Fig. 15 is an envelope because of the panels on the outside having a space to fill inside. The panels shown are on the outside (though some inside, too) with filler between them.

5) Applicant quotes Hunter's assertion that consideration in the choice of a 3-D design is whether the barrier can be bent. Then Applicant interprets the assertion to mean that stacking-versus-nesting is being weighed. The Examiner relies on Hunter's comments on the barrier's bendability to indicate that the barriers, including ones discussed in col. 9, lines 21-29, should be evaluated for bendability. As the filler is bendable, it would have been suitable, according to Hunter, for a structure that is bent.

6) The issues of teaching away/non-preferred embodiments/preferred embodiments do not distort whether R-values would actually increase by the addition of foam and powder. As the insulation would be increased by the including the powder or foam (foam has multiple gas pockets trapping air, and Hunter recognized that stationary air inhibits heat transfer in col. 6, lines 40-43), the R value increase would provide the motivation as in order to capture this R value increase.

With respect to the preferred embodiment, the teaching of preferential embodiments does not suggest failure in the alternative embodiments. As the term "preferred" indicates options rather than necessity, it would not have been necessary to only practice the preferred embodiments to gain from the teachings of Hunter.

7) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., using two rollers and a third element that are different from Späth) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The opposing rollers 12, 27, 28, and 29 constitute two rollers and a third element (see Fig. 1). The internal mandrel, for hollow core objects being bent, is only for hollow objects (see col. 1, lines 41-63). Moreover, regardless of what it is for, it is optional (see col. 1, lines 48-49—"a mandrel can be provided on the inside of the section for the purposes of support"). Thus, the reference teaches not using the mandrel. Because the mandrel is not used, then there can be no conflict between the references as combined and the mandrel.

The examiner relies on the benefit of Späth's invention is the motivation of the rollers preventing bulges and nicks of the section to be bent (see col. 1, lines 15-18).

8) The Examiner agrees that the reference to Yamashita was intended to refer to Späth, as was understood by Applicant and has been corrected within the above rejection.

9) The results of using the metal sheets with a thickness less than 100 micrometers is alleged but unsupported by facts made of record. Moreover, as detailed in the rejection, neither Benson nor Späth were relied upon to teach metal sheets with a thickness not greater than 100 micrometers.

10) Benson is not relied upon to teach the barrier sheet thickness; therefore, Applicant's admission is relied upon to teach the barrier sheet thickness. Benson is relied upon to teach that volume reduction makes a product "more valuable" (see col. 12, lines 12-14). As the barrier sheet thickness admitted by Applicant is less than the one used in Benson, then Benson would have understood that it would contribute to the product being "more valuable." The scale of this value is not provided, and any scale value—negligible, sufficient, not negligible—derived externally to Benson is inherently not derived from Benson.

11) As combined, the references include metal, and Späth teaches bending metal sections. The general teachings are present in addition to hollow tubes of metal. These general teachings are applied in Späth to bending metal without limit to whether the metal is hollow or is a tube or contains materials in addition to metal (see col. 1, lines 6-8 and claim 1). The details of bending a hollow metal tube do not negate the general teachings and their applicability.

12) The value of reduced thickness and the value of increased insulation are not mutually exclusive. In fact, it is logical to remove thickness that does not contribute insulation and replace with thickness that does improve insulation. As an air flow barrier's thickness does not effect air flow (absent rupture/failure), then a reduced thickness will not allow air flow—removing thickness without harming overall insulation. On the contrary, the thickness of insulation material will increase overall insulation. Both of these events maximize the insulation within a thickness.

13) The amendment changed "surface" to "face," but did not change any meaning because face only indicates that the surface is on one of the outer sides. Since the outer sides face in and out, then the interpretation of "surface" or "face" to include the inner facing side still applies (see *Webster's Ninth New Collegiate Dictionary*, Page 443, **1face 5 SURFACE** (5): any of the plane surfaces that bound a geometric solid).

"Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure." In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Therefore, it is reasonable to interpret that the "face" referred to in claim 8 could refer to an inside surface of the panel.

Because Benson and Claim 8 put the polystyrene on the wall, they both meet the limitation of the claim. In response to applicant's argument that putting the polystyrene in contact with the wall adheres the panel to an object to be insulated, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., putting the polystyrene on the outer side of the face of the panel) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is 571-272-8517. The examiner can normally be reached on Monday through Friday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianne can be reached on 571-272-1196. The fax phone

Art Unit: 1732

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patrick Butler  
Assistant Examiner  
Art Unit 1732



MICHAEL P. COLAIANNI  
SUPERVISORY PATENT EXAMINER